

U. S. AIR FORCE  
SPECIFICATION  
BULLETIN

NO. 505  
18 June 1959

PARACHUTES, PERSONNEL, TESTING  
STANDARDS FOR

1. SCOPE AND PURPOSE

1.1 This bulletin applies when called out in a specification or other Air Force document. It establishes testing standards for the development testing of experimental man-carrying parachute assemblies and components thereof and outlines the general types of personnel parachutes and specific test procedures.

2. REQUIREMENTS

2.1 DATA AND MATERIALS. The following data, drawings, instructions and materials in support of the testing standards shall be submitted in duplicate to the cognizant research and development activity designated by the procuring activity for review and approval.

- a. Schematic or outline drawings of the parachute assembly.
- b. Data covering average permeability of each canopy.
- c. Written description of the sequence of operation of the primary parachute system to include performance and schematics.
- d. Written description of the sequence of operation of the reserve or auxiliary parachute system to include performance and schematics when integral with a premeditated jump-type parachute or emergency-type parachute.
- e. Drawings and specifications descriptive of the components to include type, size, construction, materials, et cetera.
- f. Detailed specifications of actuating, sensing, and release devices, drogue guns, disconnects, et cetera.
- g. Detailed test program and procedures for component and parachute assembly testing to include government facilities and equipment required.

FSC 1670

USAF and Navy  
review(s) completed.

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2.2 TYPICAL PARACHUTE RECOVERY SYSTEMS. Parachute recovery systems shall be within the limits of human tolerance as defined in MIL-C-25969 and categorized as follows:

a. Emergency-Type Parachute - Parachutes of this type shall be fully or semi-automatic for utilization with ejection-seat-equipped aircraft, or non-automatic or semi-automatic for other emergency escape applications.

b. Premeditated-Jump-Type Parachutes - Parachutes in this category shall normally be static line, timer, or otherwise automatically activated for the express purpose of aerial delivering combat, rescue, intelligence, or special purpose personnel. All premeditated-jump-type parachutes shall include a reserve or auxiliary parachute for emergency utilization. The secondary parachute shall be manually operated.

2.3 TESTING STANDARDS. The following test procedures establish the minimum acceptable standards for testing personnel parachute assemblies and components thereof. Parachute assemblies or components which have been proven under conditions similar to those prescribed herein shall be acceptable.

2.3.1 PARACHUTE ASSEMBLY TESTING

2.3.1.1 RATE OF DESCENT TESTING. Five parachutes shall be utilized to complete a series of 10 tests. The permeability of each canopy shall be checked prior to test. A rubber dummy (torso or bent form) weighting 200 pounds shall be dropped at 120 knots indicated airspeed and at an altitude that will permit parachute inflation at approximately 1,000 feet above the terrain. Static line or timer actuation is acceptable. Phototheodolite recordings of descent rate are desirable; however, if phototheodolite is not available, the drop line method of determination outlined in 2.3.1.1.1 and 2.3.1.1.2 may be substituted.

2.3.1.1.1 DROP LINE RIGGING. A 300-foot length of nylon suspension line, measured under 20 pounds tension and conforming to Type III of MIL-C-5040, shall be attached to, and neatly wound around, a lead ball approximately 3 inches in diameter; a length of white sheeting approximately 3 by 18 inches shall be attached to the ball for identification purposes. The rolled drop line shall then be placed in a sack-type container of suitable size and secured therein with a standard temporary locking pin which passes through a bungee-type loop to lock the cover. The container shall be attached to the dummy with the cover end of the container positioned towards the feet. A short length of nylon cord in accordance with

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Type III of MIL-C-5040 shall be attached to the temporary locking pin and a parachute connector link. The slack in this line shall be kept to a minimum. The end of the rolled drop line shall be securely tied to a parachute leg strap or saddle. Upon parachute opening, the extending riser shall withdraw the locking pin and permit the weighted line to hang beneath the dummy.

2.3.1.1.2 DROP LINE RECORDING. The rate of descent for each test shall be recorded by a minimum of two observers. Each observer shall be equipped with an accurate stopwatch and shall record impact intervals between the lead ball and the dummy. Observed descent times shall be averaged and the average converted to feet per second. Line length lost through knots or entanglement shall be measured and deducted from the original 300 feet prior to feet-per-second conversion. Descent rates shall be corrected to standard NASA atmosphere at sea level and averaged.

2.3.1.1.3. ADDITIONAL RATE OF DESCENT TESTING. In addition to the tests specified in 2.3.1.1, premeditated jump-type parachutes shall be subjected to rate of descent tests with dummies weighing 250, 300, and 350 pounds. Five tests at each weight are required.

2.3.1.2 TWISTED LINE TESTING. Four parachutes shall be tested. Ten tests on each parachute are required. Each parachute to be tested shall be rigged to a 250 pound rubber dummy and launched with a 15 foot static line from an altitude of 500 feet above the terrain at an indicated airspeed of 110 knots, or the safe minimum airspeed greater than 110 knots of the most suitable aircraft available. The launching method shall insure minimum dummy rotation. Each parachute tested shall be prepared for test in accordance with 2.3.1.2.1 and 2.3.1.2.2.

2.3.1.2.1 PREPARATION FOR TWISTED-LINE TESTING. Each parachute shall be subjected to permeability determination prior to testing. Permeability measurements shall conform to the specification governing the canopy material. Parachute canopies constructed of materials having an average permeability in the lower half of the specification permeability range may constitute not more than one-half of the test quantity.

2.3.1.2.2 PACKING PROCEDURE FOR TWISTED-LINE TESTING. The parachute canopy shall be folded in the prescribed or proposed manner. For parachutes utilizing deployment bags or other deployment aids, the stows of lines which close or lock the deployment bag or the lines which emerge from a closed deployment bag shall be inserted in the manner proposed for standard usage. Three 360-degree twists in either direction shall then be placed in the

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suspension lines immediately below the point at which the bag is locked closed, or the point at which the lines emerge from the bag when locked closed by other than the suspension lines. The three twists shall extend from the locking or emergence point a maximum of 30 inches. The twisted and non-twisted portions of suspension line shall then be stowed in the manner proposed, particular care being exercised to prevent the twisted portion of the lines from exceeding the 30-inch maximum length. If due to increased girth, difficulty is encountered in stowage of the twisted portion, the line retaining member, for test purposes, may be modified to obtain the desired retention characteristics. For parachutes that do not utilize a deployment bag the three 360-degree twists shall be placed immediately below the canopy skirt for a length not in excess of 30 inches and the lines stowed as proposed for standardization.

2.3.1.2.3 TWISTED LINE TEST CRITERIA. All test parachutes shall be fully inflated and in equilibrium prior to ground impact. Forty consecutive tests, without failure, are required.

2.3.1.3 RELIABILITY TESTING

2.3.1.3.1 EMERGENCY TYPE PARACHUTES. Five parachutes shall be utilized for a total of 25 tests. The permeability of each canopy shall be inspected prior to testing. Each parachute shall be rigged to an articulated dummy weighing 250 pounds and all tests shall be conducted from an altitude of 1,500 feet above the terrain. Parachute actuation shall occur 5 seconds after launching. Five tests are required at an indicated airspeed of 110 knots and five tests at 150 knots. The remaining tests shall be conducted by increasing the launching speed in 50-knot increments for each group of five tests, until testing has been completed at 300 knots.

2.3.1.3.2 PREMEDITATED-JUMP-TYPE PARACHUTES. Five parachutes, the canopies of which have been subjected to permeability inspection shall be utilized for a total of 20 tests. Each parachute shall be rigged to a 250-pound articulated dummy and launched from an altitude of 1,000 feet above the terrain. The parachutes shall be activated via the static line or other method proposed for standardization. Four tests shall be made at an indicated airspeed of 110 knots, four tests at an indicated airspeed of 150 knots, and the remaining tests in groups of four at increased airspeed increments of 50 knots.

2.3.1.4 LOW-ALTITUDE TESTING. The permeability of each canopy shall be inspected prior to testing. The use of a phototheodolite is recommended for determination of the minimum altitude required for complete parachute inflation in the launching speed ranges specified in 2.3.1.4.1.1, however, calculations recorded in conjunction with

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the testing specified in 2.3.1.1, 2.3.1.2, and 2.3.1.3 may be utilized if phototheodolite coverage is not available. In the absence of reliable data, testing shall start at 500 feet and be adjusted to the minimum altitude required for safe recovery under the required airspeed conditions. The minimum safe altitude is considered to be the highest altitude required for full parachute inflation of all test parachutes throughout the test range.

2.3.1.4.1 LOW-ALTITUDE TEST TECHNIQUES

2.3.1.4.1.1 Four parachutes rigged to 250-pound rubber dummies shall be launched for a total of eight tests at a near zero airspeed and at the minimum calculated altitude required for complete canopy inflation. Parachute activation shall be through the medium of a 15-foot static line unless, for standardization, a line of another length is proposed. On the basis of test findings, a minimum reliable altitude shall be established for use with liaison, rotary wing, and other low performance aircraft.

2.3.1.4.1.2 Four parachutes shall be rigged to 250-pound rubber dummies and dropped at an airspeed of 200 knots at the altitude determined by tests specified in 2.3.1.4.1.1. The tests shall be repeated for speeds of 150 and 110 knots. The altitude shall be adjusted to the minimum compatible with reliable parachute opening at each airspeed. Three consecutive successful tests shall then be made at each adjusted reliable minimum altitude. Three consecutive successful drops at the same altitude and airspeed during the altitude adjustment phase are acceptable.

2.3.1.5 ULTIMATE STRENGTH AND OPENING FORCE TESTING. Five new parachutes are required for a minimum of 30 tests. Each parachute shall be rigged to a 350-pound dummy and dropped at an altitude of 1,000 feet. A static line of proposed design length or timer controlled, one second delay, shall be used for parachute activation. A tensiometer shall be utilized to record opening forces. Parachutes destroyed at the lower airspeeds shall be replaced with new parachutes. A whirl tower may be utilized in lieu of aircraft, provided whirl-tower versus aircraft-conversion curves are provided for each test.

2.3.1.5.1 ULTIMATE STRENGTH TEST PROCEDURE. Parachutes shall be rigged to 350-pound dummies. Five tests shall be made at 110 knots and five tests at 150 knots. The remaining tests shall be conducted in groups of five at airspeed increases of 50 knots per group until tests have been completed at 400 knots or until parachute destruction occurs. Additional tests, as required, shall be conducted to establish destruction speed within 25 knots.

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2.3.1.6 AIRBLAST TESTING. This test phase applies to emergency-type parachutes and premeditated-jump-type parachutes designed for utilization with high-speed aircraft. Four test parachutes are required for a total of 10 tests. Each test parachute shall be rigged to a 250-pound articulated dummy. All tests shall be conducted from 2,000 feet or the minimum altitude required for safety of flight. Parachute activation shall be as determined by the testing activity, but shall be not less than 5 seconds after launching. Four tests shall be conducted at 300 knots. Two tests shall be conducted at increasing airspeed increments of 100 knots until an indicated airspeed of 600 knots has been attained. Final pack destruction speed shall be determined within 50 knots.

2.3.2 COMPONENTS TESTING. Parachute assembly components such as sensing devices, release mechanisms, disconnects, drogue guns, et cetera, shall be tested with the related parachute assembly. Parachute assembly and component testing shall include:

a. Ground (bench) tests

- (1) Life cycling
- (2) Harness styling and comfort
- (3) Hardware function
- (4) Ultimate strengths
- (5) Maintenance analysis

b. Environmental tests

- (1) Acceleration
- (2) Vibration
- (3) Shock
- (4) High temperature
- (5) Low temperature
- (6) Sand and dust



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- (7) Humidity
- (8) Salt spray
- (9) Aneroid pressure
- (10) Fungus

2.3.3 LIVE JUMP TESTING. Parachute assemblies or components thereof that do not meet the established test standard, or are marginal in reliability, shall not be subjected to live-jump testing until proven to be safe beyond reasonable doubt. Parachute assemblies or components that have been modified to affect performance shall be subjected to complete or partial retest prior to live jump when considered necessary by the testing activity. The number of assemblies or components required and tests to be performed shall be determined on the basis of the successful completion and acceptance of tests conducted under 2.3.1 and 2.3.2.

2.3.3.1 MINIMUM AND MAXIMUM AIRSPEED TESTING. The results of tests conducted under 2.3.1.3, 2.3.1.4, and 2.3.1.5 shall be evaluated to determine the airspeed range acceptable from the parachute reliability and human tolerance aspect. Tests shall be initiated at the established minimum airspeed and continued at increased increments of 25 knots for emergency-type parachutes and 10 knots for premeditated-jump-type parachutes until tests have been completed at the established maximum. Ten tests per speed increment are required. Minimum altitude shall be as determined by the testing activity; it shall be constant throughout the test phase and shall, under no condition, be below 1,500 feet above the terrain. Premeditated-jump-type parachutes shall be activated by the method proposed for standardization. Emergency-type parachutes shall be activated by the jump and pull method. In each test the automatic release shall be armed prior to aircraft exit. Unless otherwise specified, the airspeeds specified in this bulletin are indicated airspeeds in knots.

2.3.3.2 OPTIMUM EXIT TECHNIQUE TESTING. Test criteria shall be as specified in 2.3.3.1 and may be concurrent with 2.3.3.1. Optimum exit techniques shall be determined at the minimum, median, and maximum airspeeds. Ten tests are required at each established airspeed. This test phase applies only to premeditated-jump-type parachutes.

2.3.3.3 GENERAL EVALUATION TESTING. Three hundred tests are required. Altitude and airspeed requirements shall be as determined by the testing activity and shall encompass the entire

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range of safe and reliable operation established by previous tests. Tests shall be equitably distributed to provide adequate data relative to parachute assembly and component functions under closely simulated operational conditions. Testing shall determine recommended techniques of use, depth of training required, replacement requirements, and human subject reaction.

2.3.4 SPECIAL PURPOSE TESTING. Parachute assemblies or components designed for special-purpose application shall be subjected to the tests specified in 2.3.5. Test conditions and the quantity required shall be predicated on the design characteristics of the parachute proposed for standardization and, in the absence of a detail specification, shall be as determined by the testing activity.

2.3.5 OPTIONAL TESTING. Special-purpose parachute assemblies and components shall be subjected to the following tests as applicable:

a. Drift, inherent and induced, under varying wind and load conditions shall be determined. Phototheodolite, Askania, or equally accurate methods of test recording are required.

b. Maneuverability, when a design feature, shall be determined. Testing shall include controlled rate of turn controlled rate of descent, techniques of use, ease of operation, and the determination of other characteristics that are designed to result in deviation of the parachute from a normal flight path.

c. Stabilizing devices, staged deployment systems, timing devices, et cetera, shall be tested as proposed for standardization and in accordance with detail specifications or other test programs as applicable.

d. Aircraft ejection - Where practical and equipment availability permits, emergency parachutes shall be tested in actual dummy and live ejection tests.

e. Other tests - This bulletin is not limiting in scope of tests which may be conducted. The contractor or cognizant research and development activity may suggest, request, or require additional testing within the state-of-the-art to be included in the program.



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2.3.6 PERMEABILITY DATA. The average permeability of each canopy to be tested shall be determined from three readings obtained in each section of every fifth gore. The individual reading procedure shall be in accordance with Method 5450 of CCC-T-191 and any specific requirements of the specifications applicable to the cloth in the submitted canopies.

(Copies of documents required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

KLM/GIB/ca  
WCLE

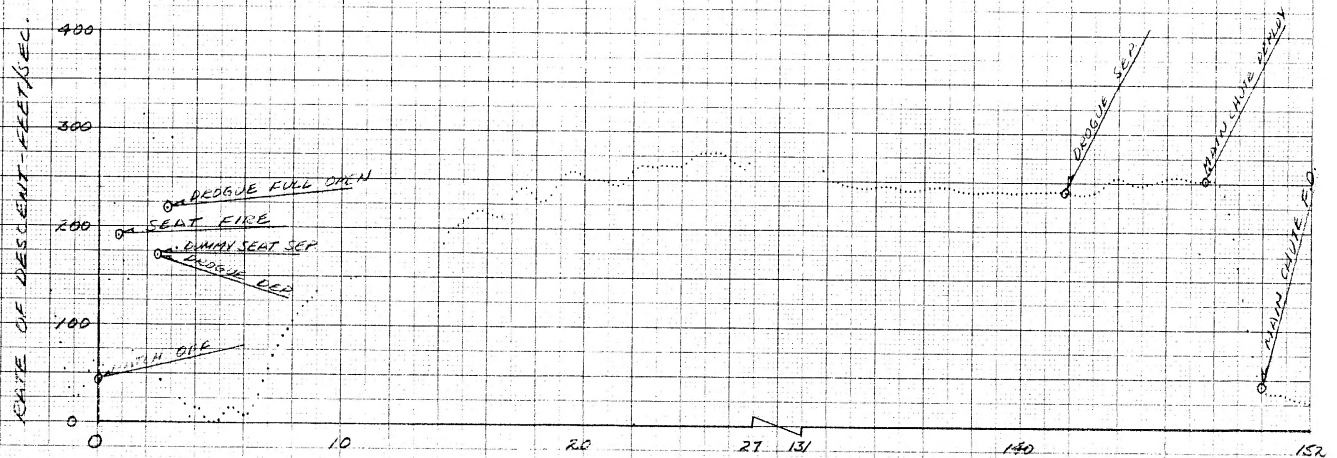
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LIC-9341  
 DROP NO. 0999  
 DATE - 11 JULY 63  
 LAUNCH SPEED -  
 LAUNCH ALTITUDE -

RATE OF DESCENT VS TIME

DES TESTS  
 F-106 B  
 DUMMY/SEAT GROSS WT. LRG.  
 4 SEC. SEAT SEP.



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LIC - 9381  
 ORAP NO. 0399  
 DATE - 11 JULY 63  
 LAUNCH SPEED -  
 LAUNCH ALTITUDE -  
 RATE OF DESCENT VS TIME  
 DES TESTS  
 FC-106 B  
 DUMMY SEAT GROSS WT. 485  
 A SEC. SEAT SER.

RATE OF DESCENT - FEET/SEC.

0  
 100  
 200  
 300

150

160

170 175

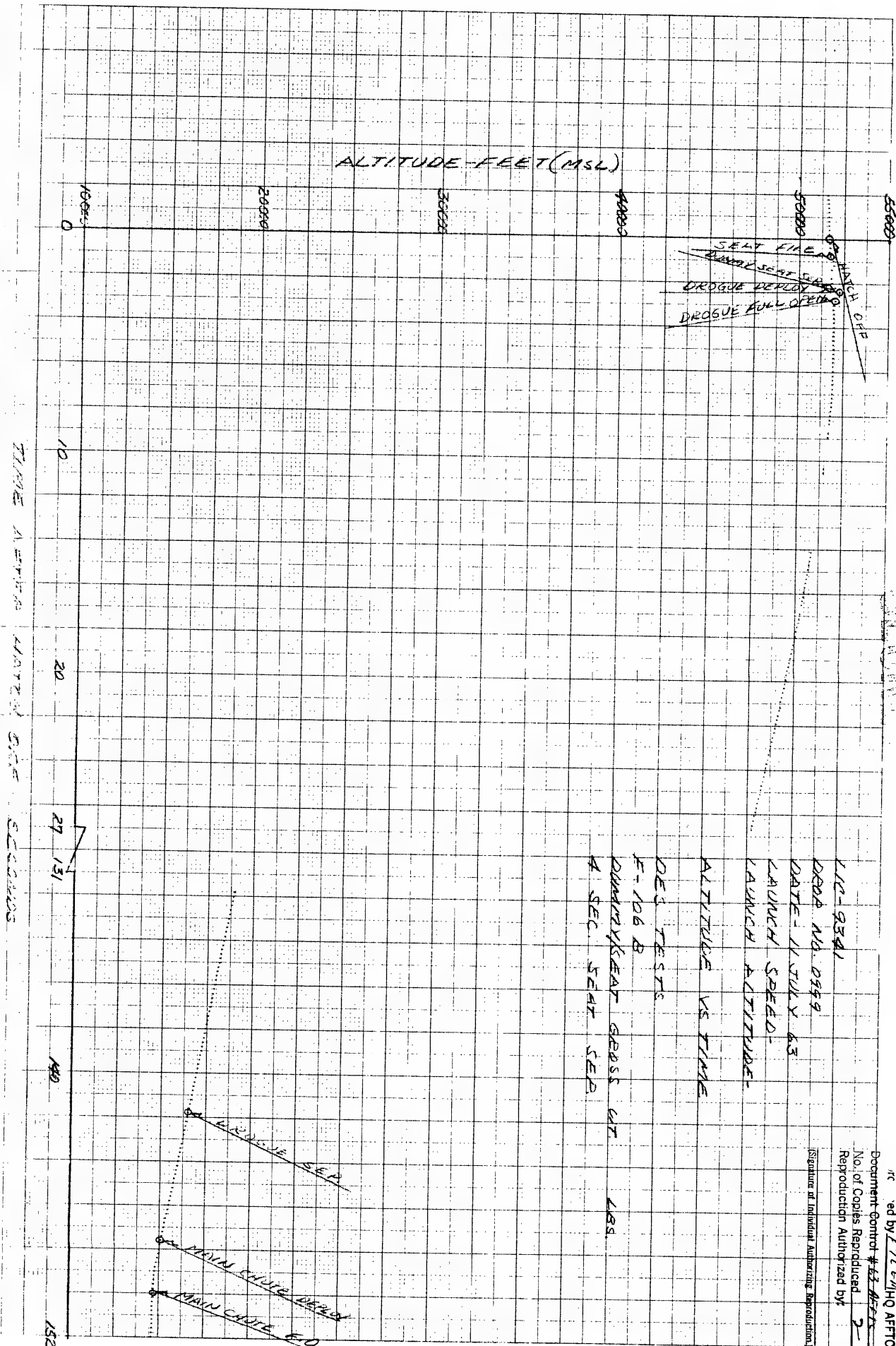
200

250

270

TIME AFTER HATCH OFF - SECONDS

SECRET



SECRET

LIC-9341  
DROB NO. 0339  
DATE - 11 JULY 63  
LAUNCH SPEED -  
LAUNCH ALTITUDE -  
ALTITUDE VS TIME  
DES TESTS  
F-106 B  
DUMMYS/SEAT GEOS WT. 485.  
A SEC. SEAT SEP.

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LIG - 9341

DEP. NO. 0999

DATE - 11 JULY 68

LAUNCH SPEED -

LAUNCH ALTITUDE -

ALTITUDE VS TIME

DES TESTS

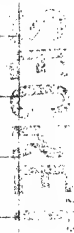
F - 106B

EMPTY/SEAT GROSS WT 485  
4 SEC. SEAT SEP.

ALTITUDE - FEET (MSL)

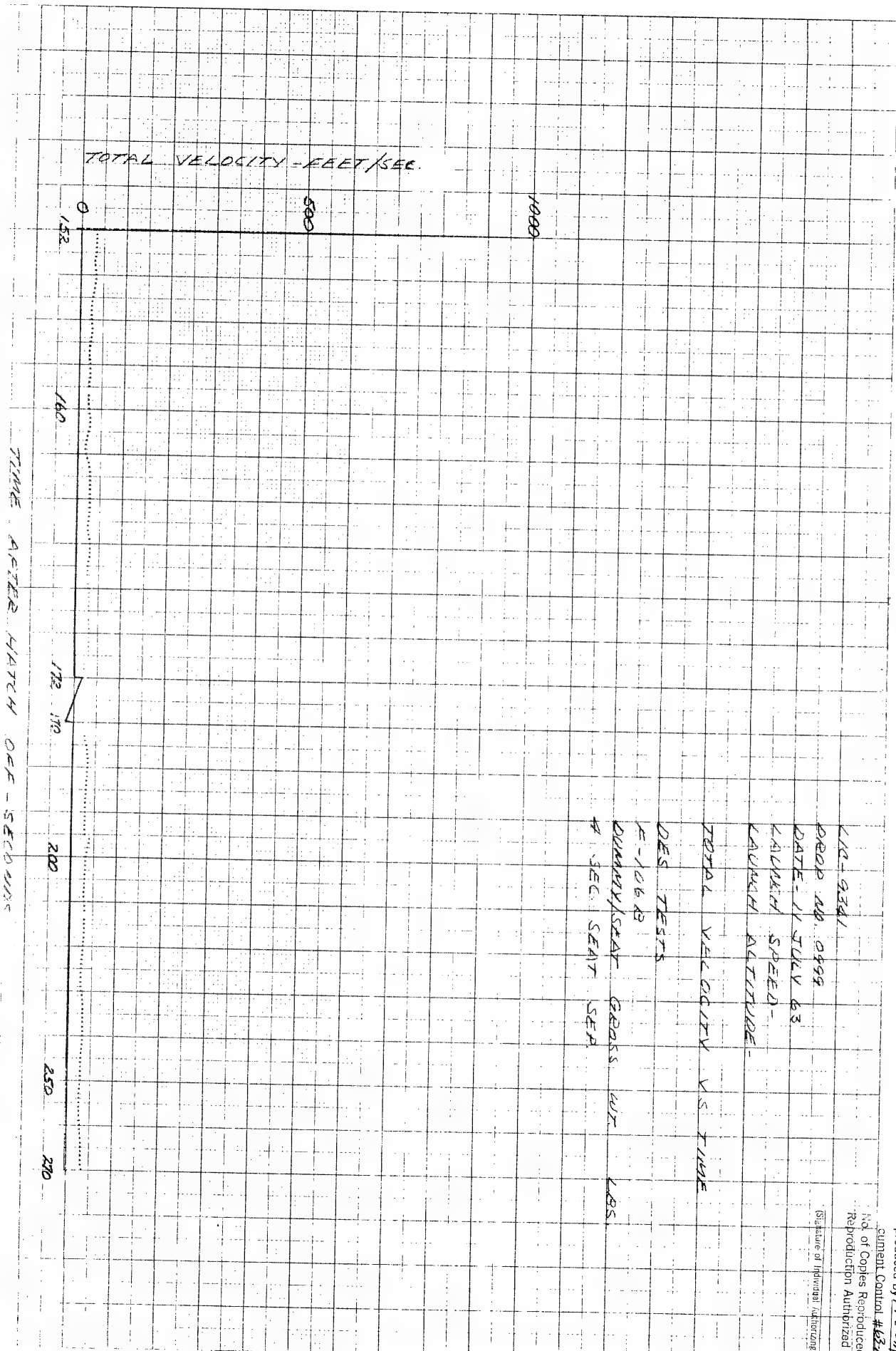
TIME AFTER IGNITION OFF - SECONDS

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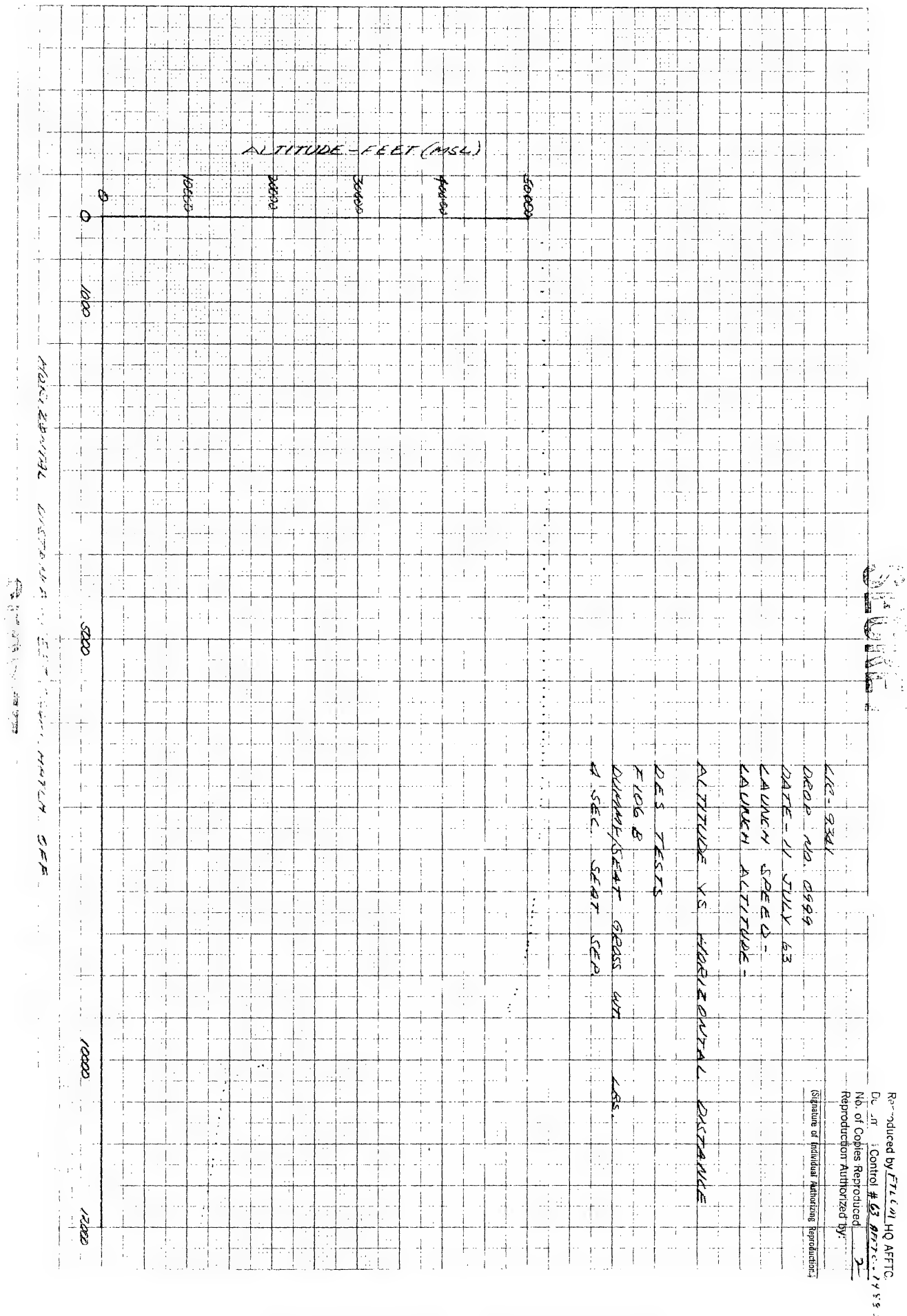
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LIO-9341  
 PROB NO. 0499  
 DATE - 11 JULY 63  
 LAUNCH SPEED -  
 LAUNCH ALTITUDE -  
 TOTAL VELOCITY VS TIME  
 DES TESTS  
 E-106 AB  
 DUMMY/SEAT CROSS CUT  
 # SEC. SEAT SEA. LBS.

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SECRET

117-9341

2202 W. 0341

DATE - 11 JULY 63

LAUNCH SPEED -

LAUNCH ALTITUDE -

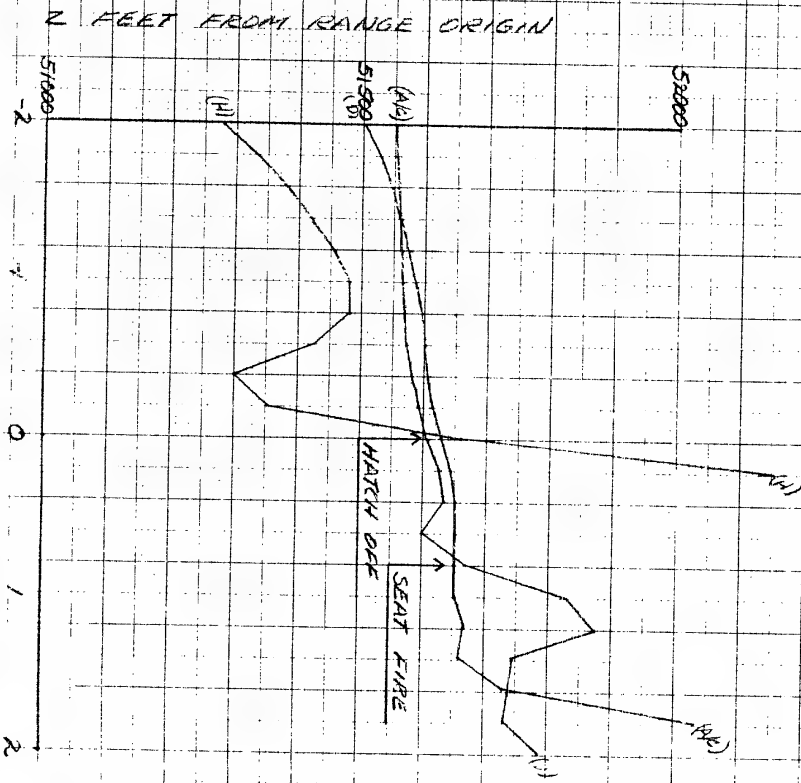
2 VS TIME

2 VS TESTS

5-1068

DUMMAY SEAT GROSS WT 285

4 SEC SEAT SEP



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# DROP TOWER TESTS

Approved For Release 2003/09/30 : CIA-RDP75B00285R000400020050-1

TEST CONDITIONS							INSTRUMENTATION DATA			RESULTS	REMARKS
TEST NUMBER	DROP NUMBER	DATE	GROSS WEIGHT	DROP HEIGHT	DROP POSITION	LOAD TRANSMITTED THRU	LEFT RISER * FORCE	RIGHT RISER * FORCE	TOTAL PEAK ** FORCE		
1	1055	7-1-64	302	26'	Feet Down	Drogue Risers	4450	4550	7550	Left side pack-vest seam opened up approximately 4 inches from point where pan widens and on down pack (Refer to photo 15149)	Cause of pack damage attributed to too much slack in the horizontal back strap.  Automatic actuators & emergency oxygen systems performed satisfactorily after test.
2	1056	7-1-64	302	25'	Back Down	Drogue Risers	5400	5400	4100 *	Same as above	Same as above  * Probable low value due to shock absorption characteristics of webbing
3	1057	7-6-64	302	28'	Head Down	Drogue Risers	4850	3700	6700	Main canopy deployed & drogue risers released when actuators armed & fired when shocked.  Cable hooking bosses on drogue releases broken off.  Pack stiffener fabric seams opened 3 inches both sides at pack retention straps (minor damage) side seams opened approx. 1 inch (minor damage) (refer to photos 15163, 15164, 15165).	Refer to text of report.  Cause of broken bosses attributed to bending action of steel neck of dummy on housings.  Pan and webbing modified to remove excess slack at horizontal back strap (refer to photos 15268, 15269) No pan damage, emergency oxygen - O.K.
4	1058	7-6-64	281	25'	Feet Down	Main Risers	4450	4350	8700	O.K. - No damage	No actuators or canopies in pack. Emergency oxygen - O.K. Same modification as above & incorporated for remainder of the program.
5	1059	7-6-64	281	25'	Back Down	Main Risers	3700	3700	5800	O.K. - No damage	No actuators or canopies in pack. Emergency oxygen - O.K.
6	1060	7-6-64	285	28'	Head Down	Main Risers	3150	3800	5500	Wrap around keeper on right main lift web stitching torn out. Vest torn loose from harness, rear cross strap attachment to top of vest threads torn (refer to photos 15161, 15162)	Cause of damage attributed to down peeling of webbing to the keeper and because this was 4th maximum strength test performed on this harness.  Drogue packed, no actuators installed, emergency oxygen - O.K.  * Left & right riser forces obtained from Brinell Gauges ** Total peak forces obtained from tensionometer

Approved For Release 2003/09/30 : CIA-RDP75B00285R000400020050-1

# WHIRL TOWER TESTS

FORM 1 OF 2

TEST CONDITIONS													TIME (SEC) * FILM Ø STOP- WATCH		TM DATA			RESULTS	REMARKS
DROP NUMBER	DATE	GROSS WEIGHT	SPEED KNOTS	RPM	ALTITUDE FEET	DISTANCE TO IMPACT, FT.	TIME TO FULL OPEN MAIN	TIME TO IMPACT	PEAK LEFT RISER	PEAK RIGHT RISER	PEAK BOTH RISERS	CANOPY DAMAGE							
TEST NO. 1094	7-7-64	257	90	8.4	90	311	3.1* 3.5Ø	3.4* 3.7Ø	1000	450	1300	NONE	-	-	Good deployment & recovery No actuators packed Drogue packed				
1095	7-7-64	251	90	8.4	90	286	- 3.7Ø	- 3.7Ø	700	700	1200	NONE	-	-	questionable full opening before impact No actuators packed Drogue packed				
1096	7-7-64	251	90	8.4	90	354	3.0* 3.5Ø	3.3* 3.6Ø	-	-	-	NONE	-	-	Good deployment & recovery No actuators packed Drogue packed				
1097	7-8-64	257	90	8.4	90	306	1.8* 3.2Ø	2.1* 3.4Ø	700	700	1400	NONE	-	-	Good deployment & recovery No actuators packed Drogue packed				
1098	7-8-64	251	120	11.3	109	309	3.3* 3.6Ø	- 4.1Ø	1200	1200	2400	NONE	-	-	Good deployment & recovery Actuators packed Drogue chute out & whirling				
Approved For Release 2003/09/30 : CIA-RDP75B00285R000400020050-1	1099	7-8-64	251	120	11.3	109	316	- 3.2Ø	- 3.3Ø	-	-	NONE	-	-	Good deployment & recovery Actuators packed, drogue out & whirling Hesitation of drogue release caused by incomplete preparation of drogue releases (detent screws not properly adjusted)				
7	1100	7-9-64	251	120	11.3	109	296	- 2.9Ø	- 3.9Ø	750	1000	1700	NONE	-	-	Good deployment & recovery Actuators packed Drogue out & whirling			

# WHIRL TOWER TESTS

TEST CONDITIONS										TIME-SEC. * FILM Ø STOPWATCH		TM DATA				RESULTS	REMARKS
TEST NO.	DROP NUMBER	DATE	GROSS WEIGHT	SPEED KNOTS	RPM	ALTITUDE FEET	DISTANCE TO IMPACT, FT.	TIME TO FULL OPEN MAIN	TIME TO IMPACT	PEAK LEFT RISER	PEAK RIGHT RISER	PEAK BOTH RISERS	CANOPY DAMAGE				
285R000	1101	7-9-64	251	120	11.3	109	311	-	-	900	500+	1400+	NONE	-	Good deployment & recovery Actuators packed Drogue out & whirling		
9	1102	7-9-64	257	300	28.1	123	698	4.00	4.00	3200	2900	5900	MODERATE	Par damaged on impact (refer to photo 15271) Breat strap pulled out of harness (refer to photo 15272) Pilot chute completely destroyed (refer to photo 15273) Quarter bag inverted (refer to photo 15270) Medium damage to vent cap. Light burns and strains main canopy, top 2 sections of gores #2 & 24 blown (refer to photo 15274)	Good deployment & recovery No actuators or drogue packed		
30	1103	7-10-64	257	300	28.1	123	467	3.00	7.20	3500	3600	7100	SLIGHT	Few light burns Quarter bag damage at locking loop (refer to photo 15283) Minor tear in netting at base of pilot chute. Damaged pack fabric & wing flap seam (refer to photo 15276) Damaged drogue deploy & right drogue release housings (refer to photo 15277)	Good deployment & recovery, no actuators or drogue pack Damaged drogue deploy housing-crippled at end fitting attributed to contact with steel neck of dummy		
101	1104	7-10-64	251	300	28.1	123	459	2.0*	6.54	3000	3100	5900	SLIGHT	Light burns & seam strains 1" seam separation at top of blew out cap Damaged drogue deployment, drogue pack flap & plate torn off (refer to photo 15279) Damaged pack fabric & wing flap seam (refer to photo 15278)	Good deployment & recovery No actuators or drogue packed Drogue deploy housing damaged at end fitting and drogue pack flap & plate torn off - attributed to T.M. Instr. link (refer to photo 15280)		
12	1105	7-14-64	275	300	28.1	123	411	2.30	6.20	-	-	-	SLIGHT	Light burns & seam strains on main canopy Separation of inner pan away material and side flap (refer to photo 15281) Minor tear in pilot chute. Minor drogue canopy & riser leakage (refer to photo 15282)	Good deployment & recovery Drogue was packed Actuators armed for unknown reason T.M. instrumentation not used for operational testing		



# HIGH Q. B-66 ARTICULATED DUMMY DROPS

TEST CONDITIONS										TIME SECONDS			RATE OF DESCENT DROGUE			MAIN			RPM DROGUE			DROGUE FORCES			RESULTS	REMARKS
TEST NUMBER	DROP NUMBER	DATE	GROSS WEIGHT	SPEED KIAS	PRESSURE ALTITUDE	ACTUAL ALTITUDE	DROGUE RELEASE	MAIN OPEN	IMPACT	MAX.	MIN.	AVG.	MAX.	MIN.	AVG.	LAST 200 FT.	MAX.	MIN.	AVG.	LEFT RISER	RIGHT RISER	BOTH INSTANTANEOUS				
1	1092	7-16-64	308	300	20,000'	21,350'	-----	-----	132	197	142	170	--	--	--	--	50	39	45	1100	700	1800	Complete loss - Main Deploy - Drogue release actuator failed to function Refer to photos # 15261 thru 15269	Launch position - back down feet to line of flight. Drogue collapsed at 4400 ft. Actuators returned for inspection for latest modification. Refer to Pacific Scientific Report #101 for cause of failure.		
2	1140	7-20-64	308	300	20,000'	21,550'	37.1	38.2	797	168	155	163	24	18	20	17	22.5	9.5	18	1600	2200	3200	Minor clamp in right hand drogue release housing (Refer to photo 15331) Small burns in peak of drogue canopy No pack or harness damage	Launch position - same as above Successful Refer to photos 15329 & 15330		
3	1093	7-21-64	308	300	20,000'	21,500'	39.4	40.3	757	169	153	161	26	20	22	17	41	35	49	750	900	1650	Minor clamp in right hand drogue release housing Small burns in peak of drogue canopy No pack or harness damage	Launch position - same as above Successful Refer to photos 15286, 15306, 15307.		
4	1141	7-21-64	308	300	20,000'	21,350'	-----	-----	778	---	---	---	26	20	18	--	--	--	---	---	---	---	Small burns in peak of drogue canopy No pack or harness damage	Launch position - same as above -- TM data, film coverage (Akanaka & Contraves not available Successful		

# LIVE JUMPS

TEST CONDITIONS										TIME - SECONDS			RATE OF DESCENT DROGUE			RATE OF DESCENT MAIN			RESULTS	REMARKS																																														
TEST NUMBER																																																																		
DROP NUMBER										DATE			SUBJECT			GROSS WEIGHT			SPEED KIAS			ALTITUDE			AIRCRAFT			DROGUE RELEASE			MAIN OPEN			IMPACT			MAX.			MIN.			AVG.			MAX.			MIN.			AVG.			LAST 200 FT.											
1										1125			7-27			Collins			315			110			6000			C-130			NA			3.0			296			NA			NA			NA			24			17			20			17			Satisfactory main canopy performance Satisfactory kit release & landing			Jump configuration: flying suit, boots, 45-lb. survival kit 54-lb. multi-stage test parachute, 19-lb. 28' reserve mask & regulator assembly used with emergency oxygen in pack. Manually pulled arming knob on exit. Kit released at approximately 1000'. Emergency oxygen actuated 5 min. prior to exit.		
2										1126			7-27			Boile			304			110			6000			C-130			NA			2.8			297			NA			NA			NA			23			18			20			19			Main canopy performance solid. Satisfactory kit release & landing. Slight difficulty with canopy releases.			Jump configuration: same as above.		
3										1169			7-28			Collins			315			110			20000			C-130			36.1			38.6			728			178			170			175			30			11			20			16			Satisfactory drogue deployment - very slow rotation to 15,000'. Satisfactory drogue release, main deploy, kit release and landing.			Jump configuration: same as above except emergency oxygen actuated 2 minutes prior to exit.		
4										1170			7-28			Powers			297			110			20000			C-130			37.2			39.7			738			180			170			177			25			17			20			18			Satisfactory drogue deployment - very slow rotation to the right. Satisfactory drogue release, firm main deploy kit release and landing. Emergency oxygen ran out at 2000'.			Jump configuration: same as above.		
5										1171			7-31			Castro			276			110			25000			C-130			65.2			67.7			799			180			163			174			25			17			20			18			Satisfactory drogue deployment - very slow rotation to the right to 18,000'. Between 18,000' & 16,000' rotation increased and became difficult to stop. Satisfactory drogue release, main deploy, kit release and landing. Emergency oxygen ran out at 4300'.			Jump configuration: same as above.		
6										1172			7-31			Cherry			309			110			25000			C-130			65.2			67.7			748			194			168			180			26			16			22			20			Drogue entangled with legs momentarily on deployment, mild drogue rotation. Satisfactory drogue release, main deploy, kit release. Landing was hard. Emergency oxygen ran out at 5500'.			Jump configuration: same as above		

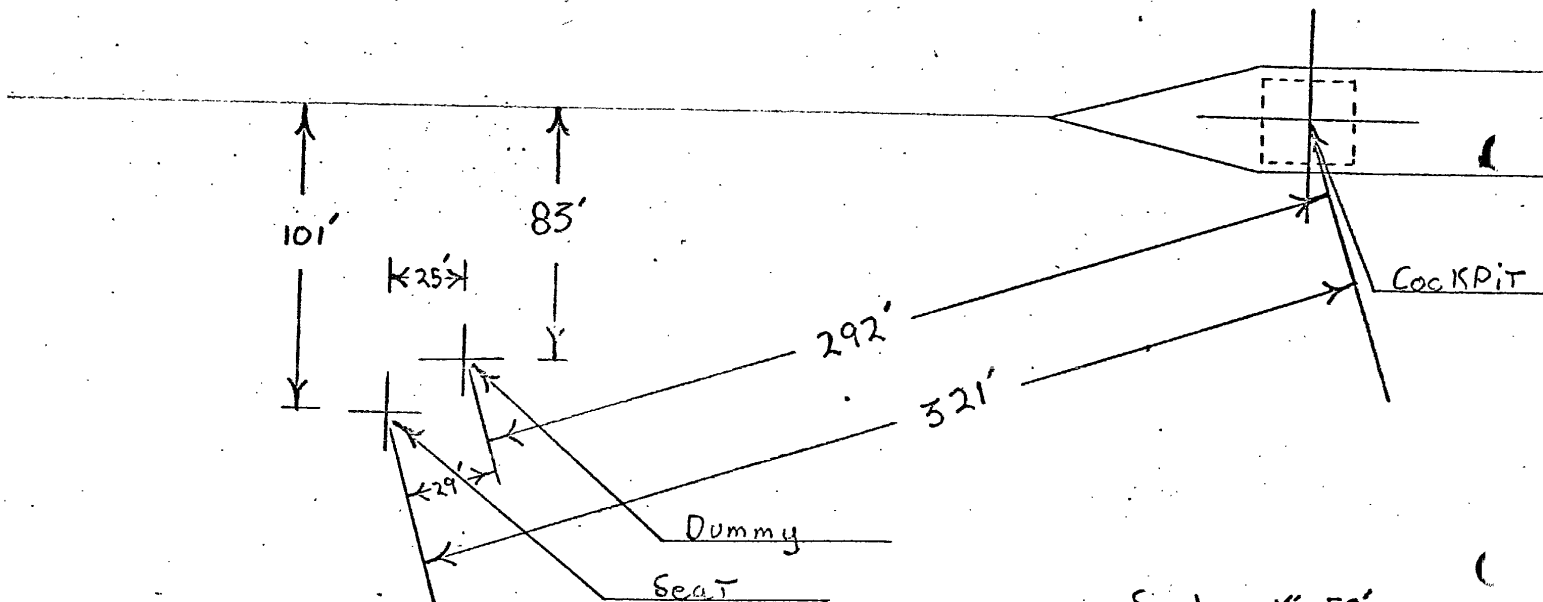
# LIVE JUMPS

TEST CONDITIONS										TIME-SECONDS			RATE OF DESCENT			RATE OF DESCENT			RESULTS	REMARKS
TEST NUMBER	DROP NUMBER	DATE	SUBJECT	GROSS WEIGHT	SPEED KIAS	ALTITUDE	AIRCRAFT	DROGUE RELEASE	MAIN OPEN	IMPACT	MAX.	MIN.	AVG.	MAX.	MIN.	AVG.	LAST 200 FT.			
7	1321	8-14	Casto	276	65	6000	H-21	NA			NA	NA	NA					Satisfactory main canopy performance and operation of suit flotation vest. Satisfactory kit release. Live raft actuation cord broke, failing to inflate raft. See jump report.	Jump configuration: Full pressure suit, 45-lb. survival kit with life raft, 24' reserve parachute, 54-lb. test parachute - main canopy deployed by manual ripcord pull on exit from helicopter. Kit released approximately 1000'.	
8	1361	8-5	Powers	270	110	35000	C-130	115	113	885	225	170	184	35	15	19.8	20	Satisfactory drogue deployment - very slow rotation to the right. Satisfactory drogue release with mild main deploy Satisfactory kit release and normal landing	Jump configuration: Flying suit, boots, 45-lb. survival kit, 54-lb. multi-stage test parachute, 19-11. 28' reserve parachute, mask & regulator assembly used with emergency oxygen in pack. Manually pulled arming knob on exit. Kit released at approximately 1000'. Emergency oxygen actuated 2 minutes prior to exit.	
9	1362	8-21	Casto	276	110	35000	C-130											Satisfactory drogue deployment, rotation to the right during descent. Satisfactory drogue release, main deploy, kit release and easy landing. Emergency oxygen ran out at 8000'.	Jump configuration: Full pressure suit, 45-lb. survival kit with battery for face heat. 19-11. 28' reserve parachute, 54-lb. test parachute. Manually pulled arming knob on exit kit released at approximately 1000'. Emergency oxygen actuated 2 1/2 minutes prior to exit.	

Approved For Release 2003/09/30 : CIA-RDP75B00285R000400020050-1

TEST CONDITIONS				RESULTS																				REMARKS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
TEST NUMBER	DROG NUMBER	DATE	SPEED KIAS	ALTITUDE (1000 feet)	EJECTED WEIGHT LB.	TO MAIN SEAT SEPARATION	TO FULL OPEN MAIN	TO IMPACT	MAIN SEAT SEPARATION	PARACHUTE OPERATION	ROCKET BURN OUT (SECONDS)	MAXIMUM HEIGHT DUMMY FEET	DISTANCE TO IMPACT (FEET)	Force Data (Pounds)		Accelerometer Data (G's)	Rate Gyro °/Sec.	R/D FPS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					

22, July, 1964



Scale - 1" = 50'

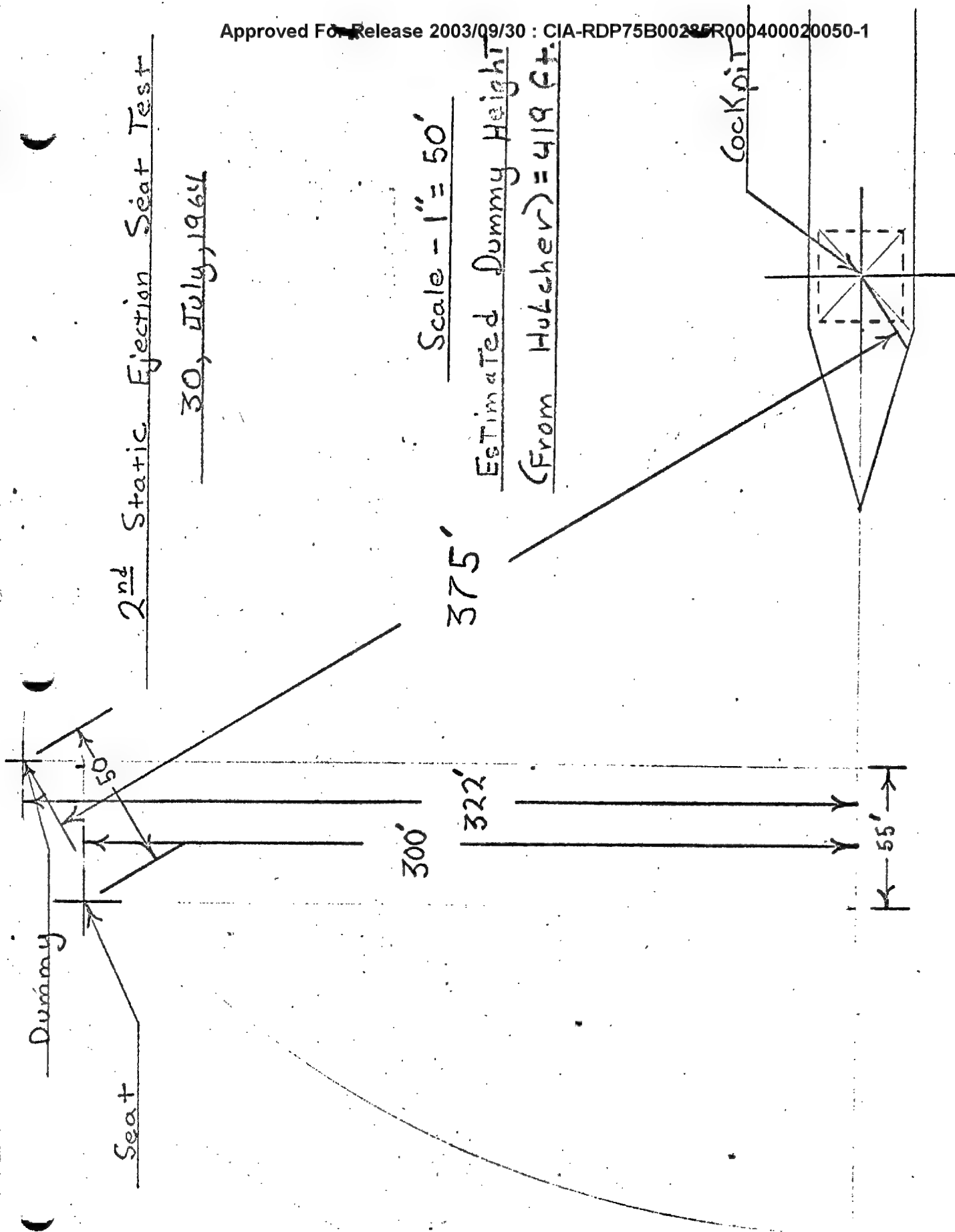
Estimated Dummy Height  
(From Movies) = 300 FT.

2<sup>nd</sup> Static Ejection Seat Test

30, July, 1964

Scale - 1" = 50'

Estimated Dummy Height  
(From Holcher) = 419 C.F.

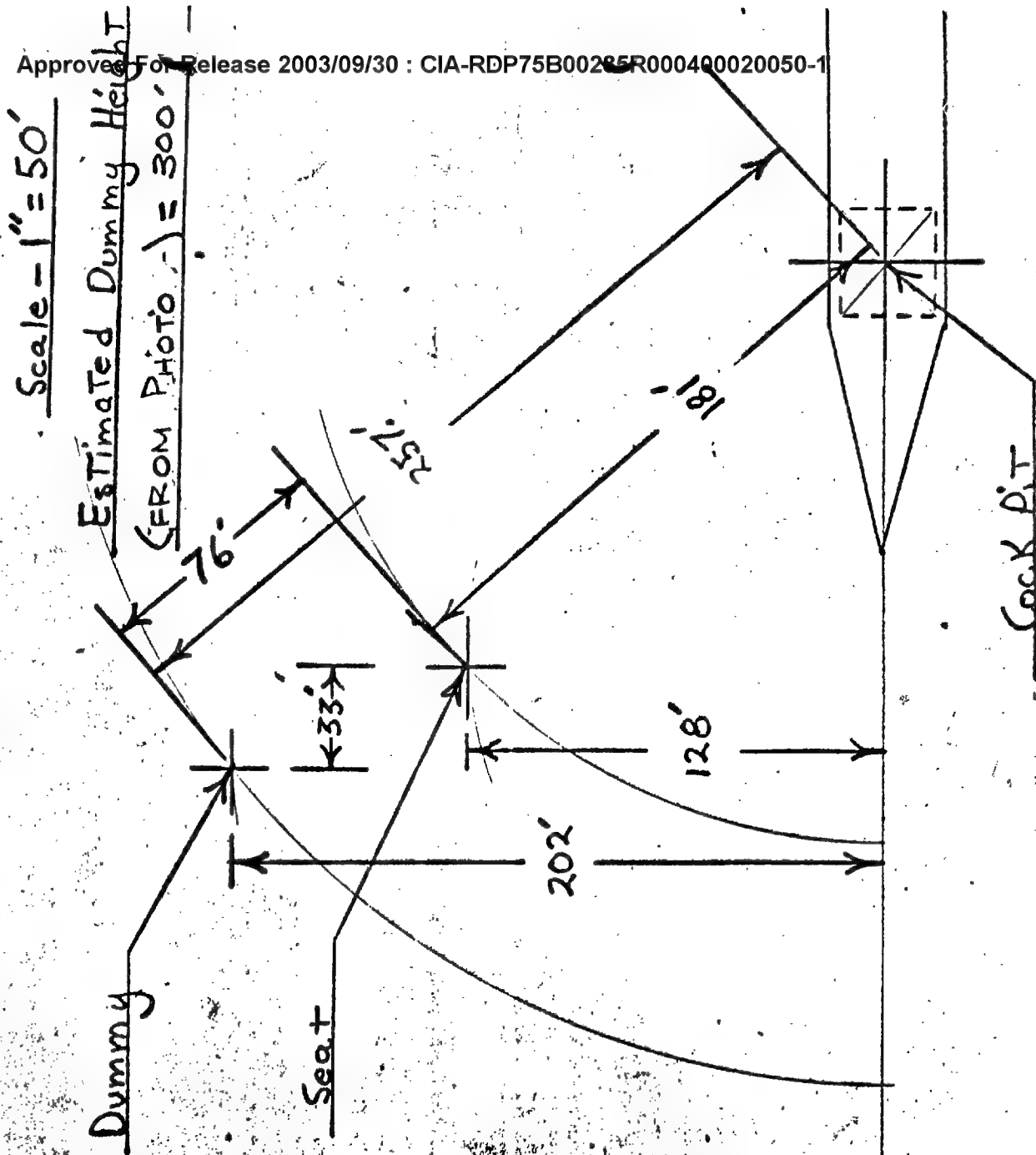




3rd Static Ejection Seat Test

6, Aug, 1964

Approved For Release 2003/09/30 : CIA-RDP75B00285R000400020050-1



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NEG. NO: LAP- 6 6 4 3 (L)-4-62      DATE: 4-4-62  
SUBJ:

FTL-232 PARACHUTIST MULTISTAGE PARACHUTE,  
DROP TEST 0549F62. HERITONER TEST AT 270  
KNOTS, 2.25 FABRIC.

SEQUENCE STILL G/A, 30 FRS. (70MM, FRAMES  
11 THRU 120)

FRAME NO.

CODE: A/PLO

U. S. NAVAL PARACHUTE FACILITY  
EL CENTRO, CALIFORNIA

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NEG. NO: LAP-6 5 4 3 (LJ)-4-62  
SUBJ:

DATE: 4-4-62

FTL-232 WAS AERIAL MULTISTAGE PARACHUTE,  
DROF TEST 0549F68 AIRLAWER TEST AT 270  
KNOTS, 2.25 FABRIC.

SOURCE STILL C/A, 30 FES. (70M, FRAMLS  
77 THRU 120)

FRAME NO.

CODE: JPLC  
U. S. NAVAL PARACHUTE FACILITY  
EL CENTRO, CALIFORNIA







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NEG. NO.: IAP- 6 6 4 3 (E)-4-62

DATE: 4-4-62

SUBJ:

FTI-232 (U.S. NAVAL AVIATION) MULTISTAGE PARACHUTE;  
DROG TEST NO. 549F62 AIRBORNE TEST AT 270  
KNOTS, 2.25 PARACHUTE.  
SUNNCE STILL G/A, 30 FPS. (70M, FRAMES  
#1 THRU #20)

FRAME NO.

CODE: N/PJ

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NEG. NO: LAP- 6 6 4 3 (L)-4-62      DATE: 4-4-62  
SUBJ:

FTL-232 ME MOUNTAIN MULTISTAGE PARACHUTE  
DROF TEST 0549F68 MILITARY TEST AT 270  
KNOTS, 2.25 FABRIC.

SOURCE STILL G/A, 30 FBS. (7044, FRANKS  
THRU 720)

FRAM NO.

COOL: 1/PLU  
U. S. NAVAL PARACHUTE FACILITY  
EL CENTRO, CALIFORNIA





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DATE: 4-4-62

NEG. NO: LAP- 6 6 4 3 (L)-4-62

SUBJ:

FTL-232 - EXPERIMENTAL MULTISTAGE PARACHUTE,  
DROP TEST 0549768 HIRLOWER TEST AT 270  
KNOTS, 2.25 FABRIC.

SEQUENCE STILL G/A, 30 FES. (70MM, FRAMLS  
#1 THRU #20)

FRAME NO.

4  
CODE: 7/PLU  
U. S. NAVAL PARACHUTE FACILITY  
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REF NO: IAP- 6 6 4 3 (L)-4-62      DATE: 4-4-62  
SUBJ:

FTI-232, PARACHUTE, NATAL MULTISTAGE, PARACHUTE,  
DROF TEST, 0549F68, AIRBORNE TEST AT 270  
KNOTS, 2025, FABRIC.

SU UNCT STILL G/A, 30 FPS. (7044, FRAMES  
11 THRU 120)

FRAM. NO.

COPIES: 4/PIO

U. S. NAVAL PARACHUTE FACILITY  
EL CENTRO, CALIFORNIA





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NEG. NO: LAP- 6 8 4 3 (L)-4-62      DATE: 4-4-62  
SUBJ:

FTL-232. INITIAL MULTISTAGE PARACHUTE,  
DROP TEST 0549F62. AIRFLOWER T-SHIRT AT 270  
KNOTS, 2-25 FABRIC.

SEQUENCE STILL G/A, 30 FPS. (7044, FRAMES  
#1 THRU #20)

FRAME NO. 6

COOL: N/PLC  
U. S. NAVAL PARACHUTE FACILITY  
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NEG. NO: LAP- 6 8 4 3 (L)-4-62      DATE: 4-4-62  
SUBJ:

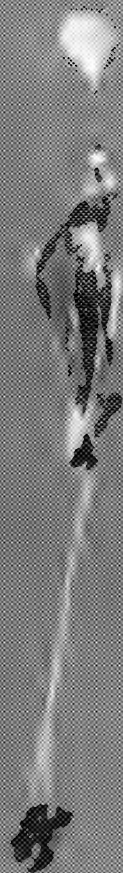
FTI-232 OF CENTRAL MULTISTAGE PARACHUTE,  
DROP TEST 0549768 AIRBORNE TEST AT 270  
KNOTS, 2-25 FABRIC.

SIDING STILL Q/A, 30 FES. (70MM, FRAMES  
71 THRU 720)

FRAME NO.

CODE: -4/PLD  
U. S. NAVAL PARACHUTE FACILITY  
EL CENTRO, CALIFORNIA







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NEG NO: 148-6543 (L)-4-62 DATE: 4-4-62  
SUBJ:

PTL-232 OF AMBULANT MULTISTAGE PARACHUTE,  
DROP TEST 0549F62 AIRCRAFT T. ST. AT-270  
KNOW, 2.25 F. BRIG.

STILL G/A, 30 FES. (70M, FRAMES  
2000 200)

FRAM. NO.

CODE: 1/PL  
U. S. NAVAL PARACHUTE FACILITY  
EL CENTRO, CALIFORNIA



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NEG. NO: LAP- 6 8 3 (L)-4-62      DATE: 4-4-62  
SUBJ:

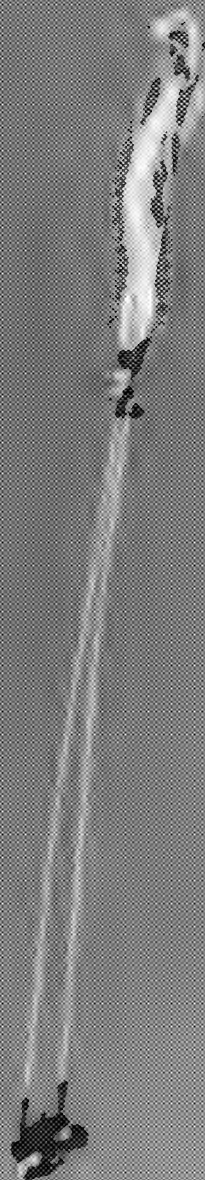
FTL-232 62 ACCELNTAL MULTISTAGE PARACHUTE,  
DROP TEST 0549F68 HIRLPOWER TEST AT 270  
KNOTS, 2.25 FABRIC.

SOURCE STILL G/A, 30 FES. (JOM, FRAMS,  
71 THRU 720)

FRAME NO. 9

COOL: /PLU  
U. S. NAVAL PARACHUTE FACILITY  
EL CENTRO, CALIFORNIA





NETG.NO: IAF 6 6 4 3 (7/74)62  
SUBJ: DATT: 4-4-62

FRATE M.

# THE





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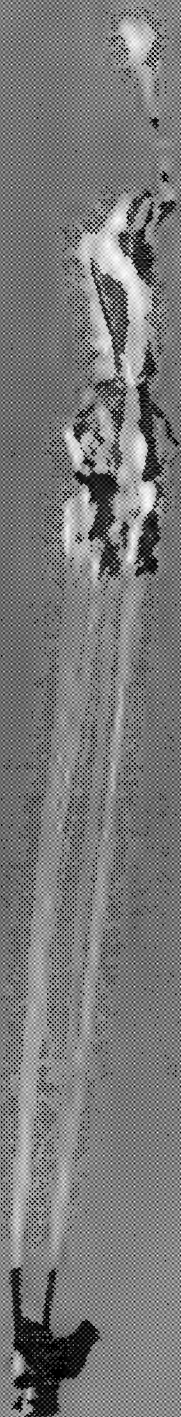
REF NO: LAP- 6 6 4 3 (L)-4-62      DATE: 4-4-62  
SUBJ:

FTI-232 1st ALLIANTAL MULTISTAGE PARACHUTE,  
DROP TEST 054966 AIRBORNE T. ST. AT 270  
KNOTS, 2.25 FABRIC.  
S. J. NCE STILL G/A, 30 FES. (70M, FRAMLS  
#1 THRU #20)

FRAM. NO.

COOL: 2/Plu  
U. S. NAVAL PARACHUTE FACILITY  
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C. NO: LAP- 6 8 4 3 (L)-4-62      DATE: 4-4-62  
C. J:

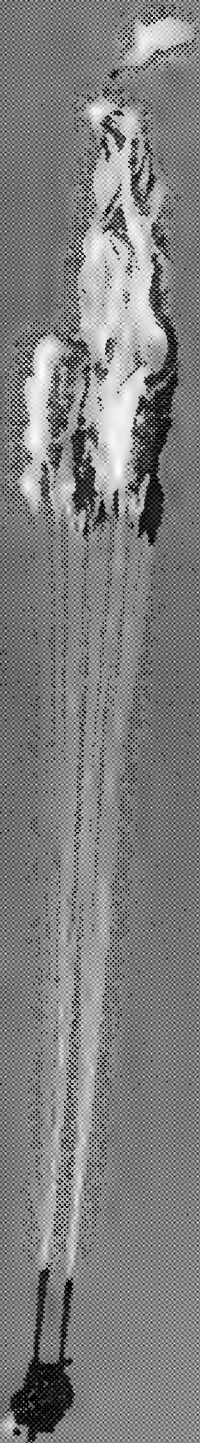
FTL-232 1st MILITARY MULTISTAGE PARACHUTE,  
DROF TEST 0549F68 HURLPOWER TEST AT 270  
KNOTS, 2.25 FABRIC.

SEQUENCE STILL G/A, 30 FES. (70M, FRAMES  
71 THRU 120)

FRAME NO.

U. S. NAVAL PARACHUTE FACILITY  
EL CENTRO, CALIFORNIA





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UNLESS OFFICIALLY REQUESTED

NTG NO: LAP- 6 6 4 3 (L)-4-62      DATE: 4-4-62

SUBJ:

FTI-232      U.S. NAVY PHOTOGRAPH, PARACHUTE,  
DROF TEST 0549F62, AIRBORNE TEST AT 220  
KNOTS, 2.25 FABRIC.  
S. J. NCI, STILL G/A, 30 FRS. (70MM, FRAMES  
#1 THRU #20)

FRATE. NO.      13  
CODE: A/PIC  
U. S. NAVY PARACHUTE FACILITY  
EL CENTRO, CALIFORNIA





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NEG. NO: IAP- 6 6 4 3 (11)-1-62 DATE: 4-4-62  
SUBJ:

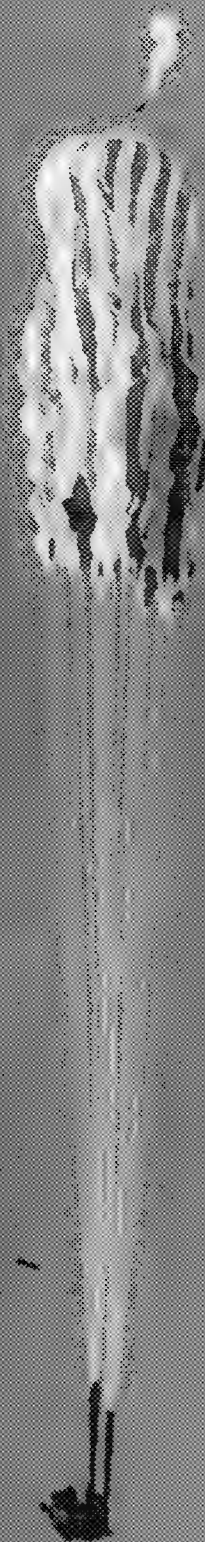
FTL-232 U. S. NAVAL AVIATION FACILITY, PARACHUTE,  
DROF TEST 4549F68 HIR/DO-18 T ST AT 200  
KNOTS, 2-25 FABRIC.  
S. J. MANCE STILL G/A, 30 FRS. (70W, FRAMES  
71 THRU 120)

FRAME NO.

14  
COUNT: 1/10

U. S. NAVAL PARACHUTE FACILITY  
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NEG. NO: LAF- 6 6 4 3. (1)-4-62      DATE: 4-4-62  
SUBJ:

FTL-232      U.S. NAVAL PARACHUTE FACILITY,  
DROF TEST 0549F68      AIRBORNE TEST AT 270  
KNOTS, 2.25 FABRIC.  
SUNNCE STILL C/A, 30 FRS. (70M, FRAMES  
#1 THRU #20)

FRAME NO. 15      CODE: 2/PIC  
U. S. NAVAL PARACHUTE FACILITY  
FT. CENTO, CALIFORNIA



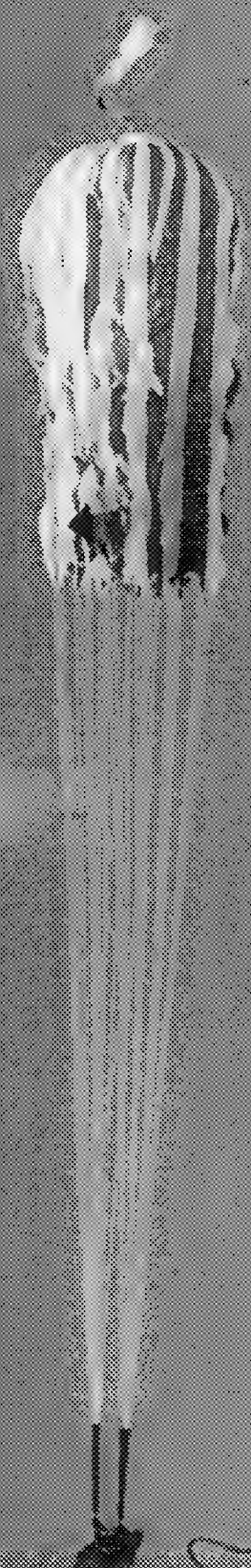
OFFICIAL NO. 5. NAME: FRANK  
NOT FOR PUBLICATION  
UNLESS OFFICIALLY RELEASED

NET. NO: LAP-6643 (L)-4-62 . DATE: 4-4-62  
SUBJ:

FTL-232 . . . . . NTAL . . . . . PA. ACHUTE,  
DROU TEST . . . . . 454,968 . . . . . T ST AT 270  
KNOTS, 2.25 F. BRAC.  
SI. U. NOT STILL G/A, 30 FRS. (70M, FRANKS  
/2 THRU #20)

FRANK NO: . . . . .  
CODE: A/PL  
U. S. NAVAL PARACHUTE FACILITY  
EL CENTRO, CALIFORNIA





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DATE: 4-4-62

REF. NO: LAP-6643 (L)-4-62

SUBJ:

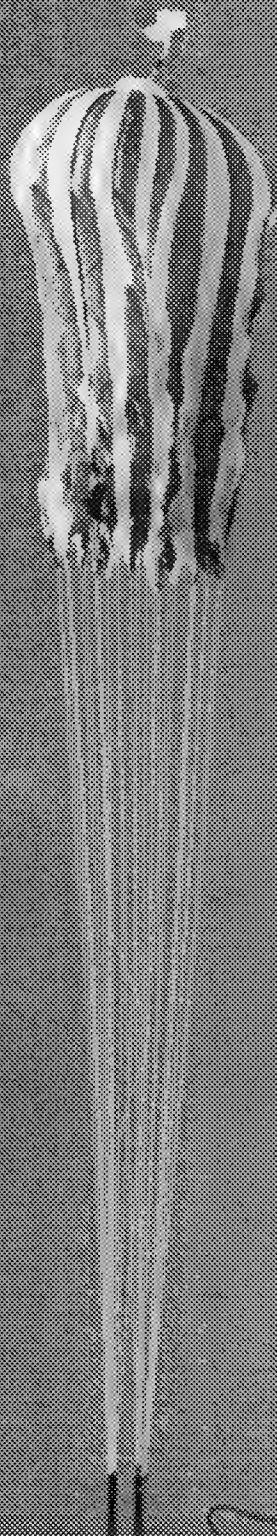
FTI-232 (L) - NAL MULTISTAGE, FA. ACUT.,  
DROF TEST 0549F68. AIRCRAFT T. ST. T 270  
KNOTS, 2.25 F. BRIC.  
S. H. NGI STILL C/A, 30 FBS. (70/100, FR. M. S  
12 THRU 720)

FRAME NO.

CODE: 1/10

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NEG. NO: LAP- 6 6 4 3 (L)-4-62  
SUBJ:

DATE: 4-4-62

FTL-232 AIRCRAFT MULTISTAGE PARACHUTE,  
DROP TEST 0549F62 THIRTY-ONE TEST AT 270  
KNOTS, 2.25 FABRIC.  
SEQUENCE STILL G/A, 30 FPS. (70MM, FRAMES  
#1 THRU #20)

FRAME NO. 18

CODE: A/PL

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NEG. NO: LAP- 6 6 4 3 (L)-4-62

DATE: 4-4-62

SUBJ:

FTL-232 MULTISTAGE PARACHUTE,  
DROP TEST 0549F62 WHIRLWIND TEST AT 270  
KNOTS, 2.25 FABRIC.

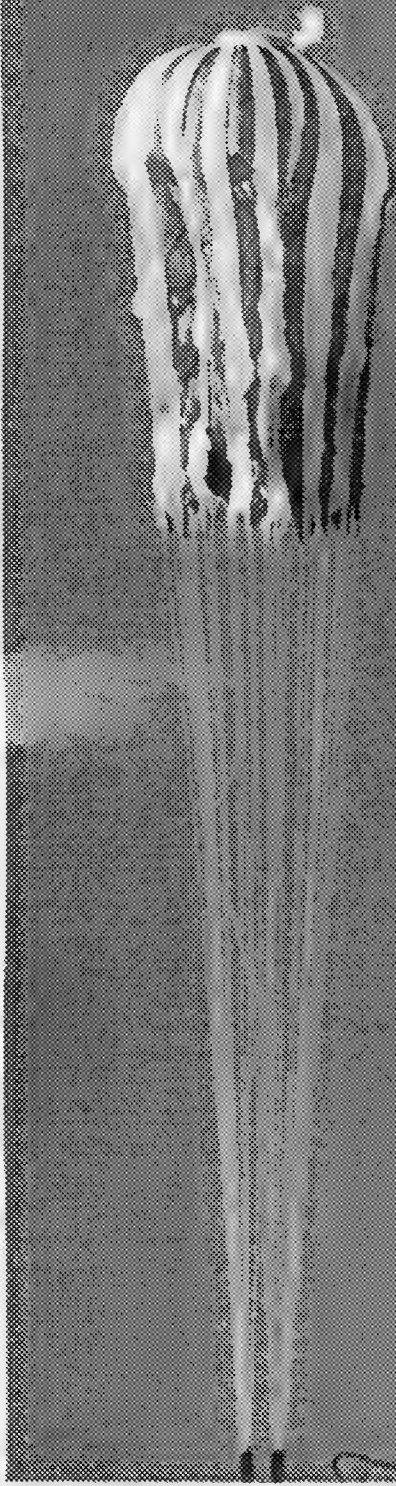
SEQUENCE STILL G/A, 30 FPS. (70MM, FRAMES  
#1 THRU #20)

FRAME NO. \_\_\_\_\_

18  
CODE: 4/PLD

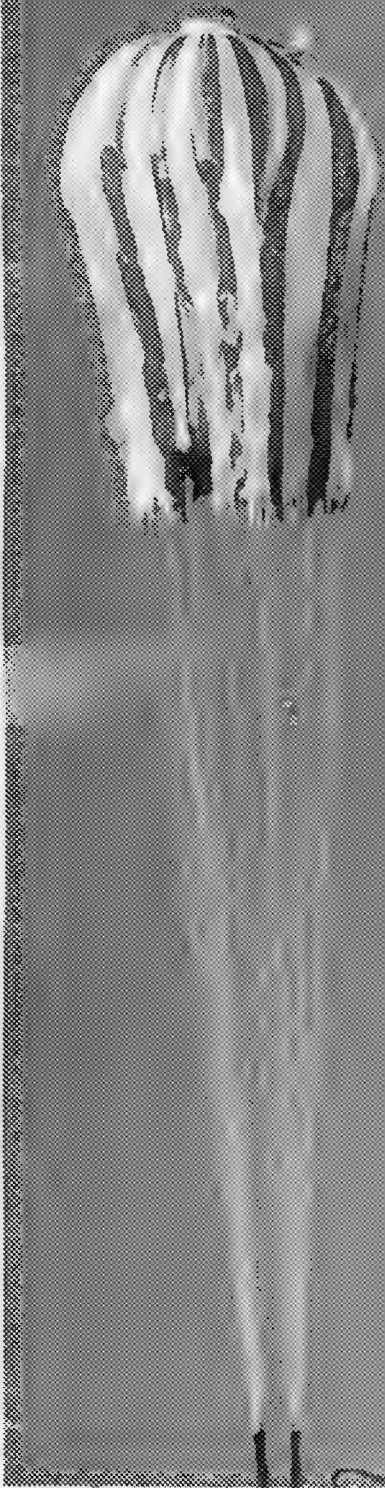
U. S. NAVAL PARACHUTE FACILITY  
EL CENTRO, CALIFORNIA







U. S. NAVY PHOTOGRAPH  
NOT FOR PUBLICATION  
UNLESS OFFICIALLY ESTIMATED  
DATE: 4-4-62  
SUBJ: FTL-232, AT ATLANTIC, MULTISTAGE, PARACHUTE,  
DROPPED TEST 0549F68, WINDTOWER TEST AT 270  
KNOTS, 2/25 FABRIC.  
S.D. HUNCE STILL G/A, 30 PPS. (70MM, FRAMES  
#1 THRU #20)  
FRAME NO. \_\_\_\_\_  
CODE: 2/PLO  
U. S. NAVY PARACHUTE FACILITY  
FT CENTRO, CALIFORNIA



OFFICIAL U. S. NAVY PHOTOGRAPH  
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UNLESS OFFICIALLY RELEASED

FIG. NO: LAP- 6 6 4 3 (L)-4-62  
SUBJ:

DATE: 4-4-62

FTL-232 and ALLANTAL MULTISTAG. PARACHUTE,  
DROP TEST 0549P62 WHIRLWIND TEST AT 270  
KNOTS, 2.25 FABRIC.  
SEQUENCE STILL G/A, 30 FTS. (70MM, FRAMES  
11 THRU 20)

FRAME NO.

20

CODE: 1/PLC

U. S. NAVAL PARACHUTE FACILITY  
EL CENTRO, CALIFORNIA







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NIG.NO: LAP- 6 6 4 3 (L)-4-62

DATE: 4-4-62

SUBJ:

FTY-22 AX-RENTAL MULTISTAGE PARACHUTE,  
DROPTEST 0549F62 WHIRLTOWER TEST AT 270  
KNOTS, 1,15 FABRIC.

S. U NC STILL G/A, 30 FPS. (70MM, FRAMES  
#1 THRU 20)

FILE NO.

CODE: A/PLC

U. S. NAVAL PARACHUTE FACILITY  
P.O. BOX 100, CALIFORNIA



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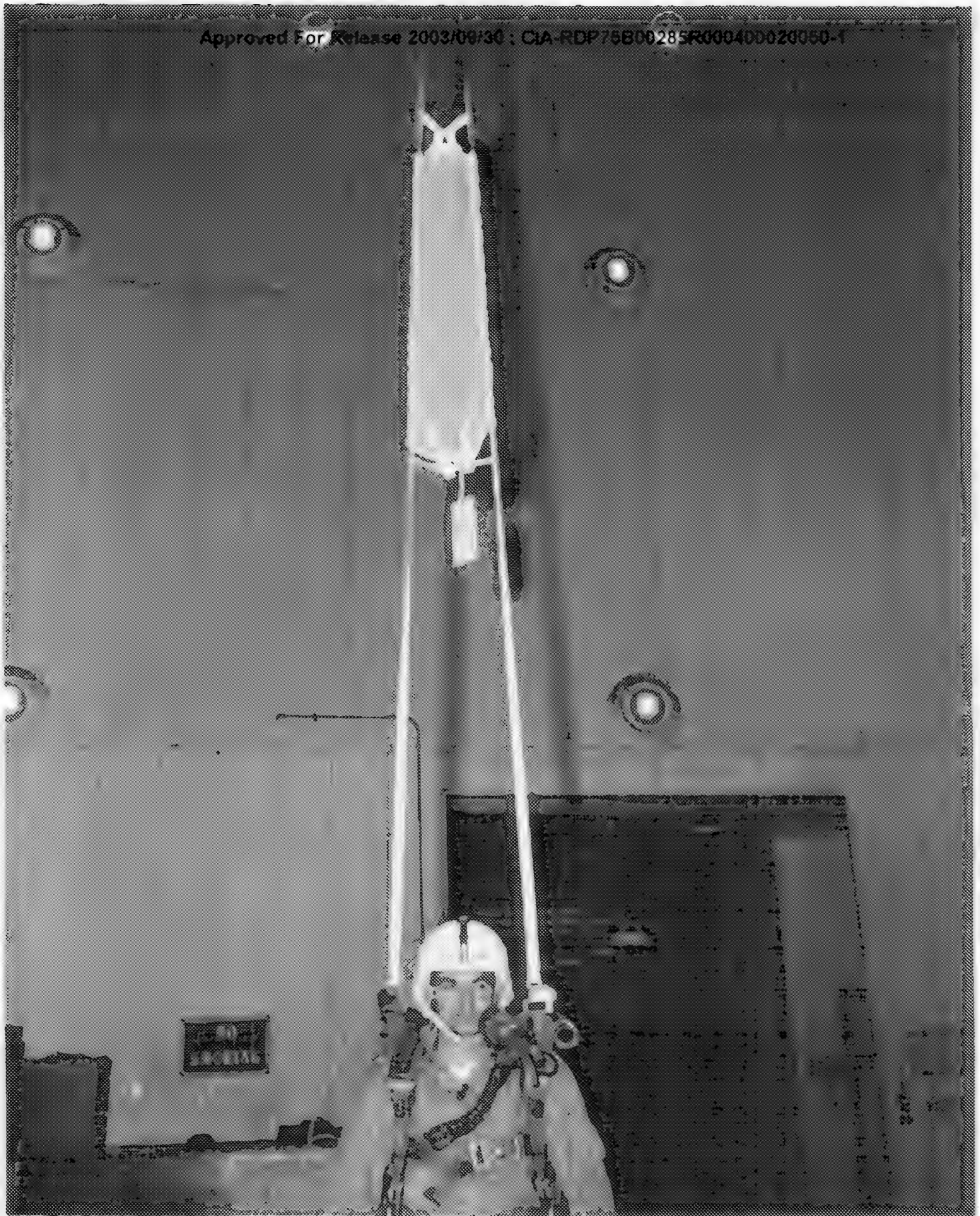
NEG. NO: LAP- 7925 (L)-7-62 DATE: 7-25-62

SUBJ: FTL-232 EXPERIMENTAL PERSONNEL PA-  
RACHUTE (MULTISTAGE), - HARNESS  
STRENGTH TESTS.

HARNESS, SHOWING RESULT OF 12,200  
LB FORCE APPLIED AT DROP TOWER  
TEST #1373F62.

CODE: A/P2  
U. S. NAVAL PARACHUTE FACILITY  
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REF. NO: LAP-  
SUBJ:

6419

(L)-2-62 DATE: 2-8-62

FTL-232 EX. EQUIPMENT/L MULTISTAGE PER-  
SONNEL PARACHUTE ASSEMBLY SUSPENSION  
TDSM

CODE: 1/P7

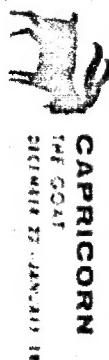
U. S. NAVAL PARACHUTE FACILITY  
EL CENTRO, CALIFORNIA



OFFICIAL NAVY PHOTOGRAPH  
NOT TO BE USED FOR PUBLICATION  
BY THE ORDER OF THE  
CHIEF OF NAVAL OPERATIONS

REC. NO. LAP. 1641(L)-4-58 DATE: 4-7-58  
SUB E: FTL-56A MULTI-STAGE PARACHUTE MODEL 1-7  
DROP SEQUENCE BOARD. COMPOSITE

CODE: 011  
NAVAL PARACHUTE UNIT  
NAS, EL CENTRO, CALIF.



THE GOAT  
DECEMBER 22 - JANUARY 19

# JANUARY

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1	2	3	4	5	6
8	9	10	11	12	13
14	15	16	17	18	19
20	21	22	23	24	25
26	27	28	29	30	31

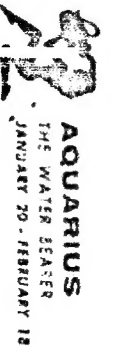
Ten Dummy Drops of Parachute Configuration at El Centro Calif. January 16<sup>th</sup> thru January 20<sup>th</sup>

Six on the Deck - low speed ejections at the Area JAN 23<sup>rd</sup> thru FEBRUARY 3<sup>rd</sup>

Mock up at contractors of Pressure Suit Parachute and Survival Kit Assy.

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# FEBRUARY

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5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				
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ST. VALENTINE'S DAY

ASH WEDNESDAY

WASHINGTON'S BIRTHDAY

Calibration run and four sled runs at Edwards AFB

February 20th thru March 3rd

Twenty live jumps with new parachute at El Centro, Calif.

FEBRUARY 6th thru FEBRUARY 17th